

MANAGEMENT ISSUES AND RECOMMENDATIONS

1. Define collaboration between two divisions for trail maintenance

The Division of Resource Management and Division of Landscapes and Roads are both responsible for trail maintenance within the park. The Division of Landscapes and Roads concentrates on the paved and modified gravel trails that are wide enough for vehicle access. Examples include the River Trail and Valley Creek Trail. The Division of Resource Management concentrates on the unpaved trails that are either too narrow or steep for vehicle access. There is a distinct gray area in the classification of what constitutes a “trail.” Several trails currently maintained by the Division of Resource Management are old, possibly historic, cart paths or roads and therefore should be maintained as such. Maintenance of historic road traces may involve appropriate side ditches, crowning, regrading material that has been washed during heavy storms, and replacing lost material with the use of motorized equipment. Maintenance of trails may involve the construction of log waterbars and checkbars, which retain the trail tread but are obstacles to vehicles. Collaboration is needed for the maintenance and material moving needs associated with these paths. The park’s future General Management Plan should distinguish which trails should be maintained as roads, with road features and accessible by vehicle, versus trails with constructed trail features that can be accessed with smaller equipment. Recommendations for individual trails are made in Chapter V of this assessment.

Several large drainage features need to be addressed by an engineer. For example road culverts under the Inner Line Drive on Mount Joy are washing out the slope below the road beside Mount Joy Trail J. On the north side of the park culverts on the River Trail need repairs and a concrete culvert along the Fatland Trail is deteriorated. These features require assessment and repair plans by an engineer.

Collaboration recommendations:

- Identify how resource management and maintenance divisions, and other divisions, will collaborate for each road or trail, with respect to routine patrols and maintenance, emergency repairs, cyclic maintenance projects, volunteer projects, trail user education, and enforcement. Also define areas of collaboration, including project proposals, project schedules, record keeping and NPS maintenance management systems, stockpiling and movement of materials with vehicles and equipment, and use of tools
- Define maintenance techniques in terms of road or trail maintenance standards

2. Utilize both professional trails crews and volunteers for trail maintenance

As described earlier in the setting and purpose for the project, the park trails are heavily used by hikers, bikers, and horses and the maintenance program is limited. A forgone conclusion is that the trails require increased maintenance to combat the extensive erosion and gullyng observed throughout the park’s trail system. However, with the assumption that the park will continue to work with a limited amount of park staff time, the recommendations are organized to be

implemented by three groups: professional trail crew members, trained volunteer groups, and singular volunteer events.

For most trail projects, a mix of skilled to unskilled workers can achieve excellent and timely results. To maximize the effectiveness of these groups, Valley Forge NHP should focus on training of current staff to coordinate and direct these groups, consider additional skilled employees, and invest in the training of returning volunteer leaders.

Professional trail crews may be brought in from other parks or trail maintenance organizations. The Olmsted Center for Landscape Preservation frequently organizes crew projects, where staff from several parks in the region work together for one or two weeks on a series of maintenance projects. The trails program staff from Acadia National Park have provided leadership for several of these crew projects at parks in the region. The NPS Historic Preservation Training Center organizes drywall stonework projects that have a strong training component. There are also organizations such as the Dry Stone Conservancy based in Lexington, Kentucky that can provide hands-on stonework repair training for trail maintenance professionals. With easy access from a major airport and ample nearby accommodations, Valley Forge NHP is the ideal location for professional trail crew projects and training programs.

Professional trail crews can also be contracted, such as the Appalachian Mountain Club. Some states have Conservation Corps trail crew leaders that may be available to work at Valley Forge NHP, such as are present in Maine and California. The National Civilian Conservation Corps, Americorps, Youth Conservation Corps, and the Student Conservation Association have trained trail workers and can provide a dedicated labor force. The park may also collaborate with trail crews from state or local parks with proven expertise. In all situations where professionals are brought in, the park must provide clear guidance on the specifications for the work to be done, as well as oversee protection of associated cultural and natural resources.

Trained volunteers who can return to the park at regular intervals are a valuable asset to the park's trail system. As stated above, investing in the training of volunteer crew leaders can improve the quality of trail work. Some volunteers may be able to participate in the professional crew projects and training programs described above. Group leaders who return to the park annually, such as members of the Horse-Shoe Trail Club, are ideal individuals to include in training programs. As stated above, volunteers who are carrying out trail work in the park must be given clear guidance and work specifications. Park staff should oversee the protection of associated cultural and natural resources.

A volunteer event, such as a one-day program open to the general public, offers an excellent opportunity to accomplish many hours of routine maintenance with a large number of people. Examples include a National Trails Day event on the first weekend in June, Boy Scouts volunteer projects, and corporate-sponsored events. Ideally, these projects are not overly technical or pose safety concerns. Again, these groups must have clear guidance on the work to be done and be supervised to ensure protection of associated cultural and natural resources.

Combinations of professional and volunteer teams are also rewarding. Successful projects ultimately provide the volunteers with a sense of accomplishment and the visual evidence of having made a difference in the condition of their park. The park is rewarded with an accomplished task, having been done right, through largely a low cost effort. Effective volunteer leaders understand the role each individual or group of individuals can play according to their strengths. Examples below describe project scenarios where the end product is very visual, vital to trail maintenance, and rewarding to the volunteers.

Re-benching project: A skilled trail worker, or trained individual first sets out flags dictating a section or sections of trail to be cut, and setting grade stakes at 10-foot intervals to show the height of the new trail grade. Volunteers then do the reshaping of the tread surface, with the skilled worker answering questions and providing guidance.

Checks and waterbar projects: Installation of log checks also provides an excellent opportunity for volunteers to work with trained staff. The trained individual in advance sets the flags for the location of each log check. The trained staff orders the appropriate materials and has them delivered to the trailhead. Volunteers collect the logs needed in the woods and/or carry materials in and begin the digging at the work site. The leader assesses careful placement and the depth of each log, while the volunteers haul the fill material in from the trailhead.

Crew and volunteer recommendations:

- Utilize professional trail crews, trained volunteers, and volunteer events to accomplish work
- Professionals and volunteers can work together by dividing up tasks within a project
- Maximize training opportunities for park staff and volunteer crew leaders
- Use Valley Forge NHP trail projects as local, regional or national training programs

3. Update designation for authorized and unauthorized trails

As part of the 1982 General Management Plan, a trail map was produced showing authorized trails within the park (Figure 3.1). Since 1982 some of these trails have been closed due to extensive erosion or, in a few instances, the unsafe location of the trailhead. Also since 1982, new trails have been opened. Some trails indicated on the map were never established. As part of the General Management Plan currently in progress, the park needs to examine the collection of authorized and unauthorized trails and designate an updated system. To aid this process, the project team made specific recommendations, which are shown on Drawing 2 and described in Chapter V, where each individual trail assessment contains a recommendation as to whether the trail should be kept open or closed. A comprehensive examination of the trail system and feasibility of a revised trails system (with a set of criteria for the deriving the new system) was beyond the scope of the assessment, however, the project team's observations are reflected in Drawings 2 and 5.

Authorization recommendations

- Review condition descriptions and recommendations for individual trail sections
- Consider opportunities for circuits and loops as described below
- Develop criteria to evaluate individual trails and circuits. Examples of criteria for inclusion are listed below. Alternatively, trails that do not meet these criteria may be closed:
 - Route traverses a scenic route or points of natural or cultural interest, without potential harm of resources
 - Route traverses durable tread that can be maintained and sustained with a reasonable amount of routine and cyclic maintenance
 - Route connects to parking area or safe road crossing
 - Route provides an opportunity for a loop or circuit

4. Create connections between trail segments

Trails users often seek circuits or loops when choosing trail routes. A typical scenario is that a group will leave a vehicle to explore a portion of the park by making a circuit. This issue was raised in the 1975 “Valley Forge: A Master Plan for Valley Forge State Park.” The document states:

Valley Forge Park is especially suited for trail development. Extensive forest areas, fields and streams, varying terrain, as well as historic loci provide all the amenities for interesting, educational and enjoyable trail routes. . . . There are, however, several major problems with the existing Park trail system: due to the enormous scale of the Park, trails tend to be lengthy; trails often lack circuit, and do not or cannot end where they begin; existing trails frequently have no important destinations or intermittent elements and rarely relate to historic sites or convenient parking areas; there is also a need to indicate destinations when they do occur.

The master plan goes on to propose improvements including incorporation of the historic road traces into the trail system, separation of pedestrian and vehicle use, and development of a color-coded system with routed wood markers to indicate trail destination and suitability for use by bikes, horses, or pedestrians.

Since the master plan, the six-mile paved interpretive trail (the “multi-use trail”) that parallels the auto tour road was constructed and provides a popular loop for bikes, horses and pedestrians. However, the colored path system did not establish circuits. Many other shorter and longer circuits are possible but are not clearly marked or described on the park’s current trail map. There are also opportunities to highlight and enhance appreciation of the park’s natural resources, including its diversity of flora and fauna. Conversely, some sensitive natural resource areas, such as vernal pools, should be avoided. A series of circuits and safe road-crossing points needs further study. The project team identified several circuits based on the scope of this assessment. These are included in Appendix D and Drawing 5.

Once circuits are identified, they can be featured in the park’s literature and website. At designated trailheads, the park can provide an educational sign or brochure showing the route, length, terrain, as well as educational messages about resource protection and “Leave No Trace” trail use ethics.

Circuit recommendations:

- Identify circuits that provide a variety of experiences, length, and terrain
- Designate trail heads and parking areas
- Establish safe road crossings
- Provide information and maps for circuits

5. Install signage and designate major trailhead locations

Some trails are marked at trailheads and intersections, with trail name, destination and distances, but others are not or are poorly marked. A comprehensive sign and blaze system is recommended. Vandal-proof signs are needed at each trailhead and at trail intersections. Some parking areas serve as starting points for use of the trails, such as the Yellow Springs Road parking area at the base of Mount Misery C and the Betzwood Picnic Area at the eastern end of the River Trail. These trailheads would benefit from an informative sign with a map of trails in the area as well as rules and ethics for appropriate trail use. Once on the trail network, intersection signs will help trail users navigate from one trail to the next, particularly if they are interested in completing a loop. Colored

blazes, such as are found on the Mount Misery and Horseshoe trails, help trail users distinguish between authorized and unauthorized trails. In addition, small signs may be posted to protect resources such as historic structures, revegetated areas, streambanks, and other sensitive cultural and natural resources.

For some trails, more detailed information on accessibility may be appropriate as recommended by the *Report of the Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas* (www.Access-board.gov). These guidelines describe the ideal provisions for surface, width, openings, protruding objects, obstacles, passing space, running slope, cross slope, rest intervals, edge protection, and signs. A key component to accessibility is providing this information to trail users. To provide this information Beneficial Designs Inc. of Santa Cruz in California is working on a Universal Trail Assessment Process (UTAP) to develop informative signs, guidebooks, and web sites. For example, the sign can inform trail users of the trail length, destination, average and maximum grade, cross slope, and duration of grades, average and minimum trail width, surface hardness, and presence of obstacles and hazards. The sign can also include a drawing of the trail profile to illustrate change in grade and length. Preliminary recommendations for sign locations and information are included in this report (Drawing 3).

Signage recommendations:

- Install signs at trailheads and intersections
- Implement a consistent blazing system to help keep hikers on the authorized trails
- Install resource protection signs to educate trail users where needed
- Add accessibility information to park signs, literature, and website

6. End recreational impacts to cultural and natural resources

Throughout the trails assessment project, the project team observed recreational use of the trail system that conflicted, to varying degrees, with the cultural and natural resource preservation mission of the park. For example, foot, bicycle, and horse traffic is evident beside a sign stating “keep off the entrenchments” on Mount Joy Trail N. Numerous social trails cut down the south side of Mount Joy from Trail J, through an archeologically sensitive area. Mountain bike trails are found throughout the northern side of the park, causing severe erosion in places like the impoundment dike and extensive rutting in wet areas, such as along the Superintendents Trail. The project team questioned the extent to which recreational use should be encouraged or discouraged in order to protect the park’s cultural and natural resources. It is clear that the current level of spring-time mountain bike use is causing a high level of damage on trails that are not hardened with modified gravel. The team offers the following recommendations to strike a balance between recreation and resource preservation:

Recreation/preservation recommendations:

- Close sensitive areas to mountain bike use, particularly during mud season.
- Identify zones of high and low cultural/natural resource sensitivity, create desirable recreation loops in areas of low sensitivity and increase enforcement in areas of high sensitivity
- Meet with trail users of the park (i.e. hikers, bikers and horseback riders)

7. Protect cultural resources – archeology, historic buildings, structures, monuments, and fragments

The park contains extensive archeological resources that date from Native American occupation, the American Revolution encampment period, as well as up through the state park period. Prior to extensive trail work, such as rebenching or ditch and fill work, the park's archeologist should give clearance for a trail or section of trail. To minimize disturbance of the park's abundant cultural resources, borrow pits for tread material are discouraged. However, bringing surface material back to the trail that has clearly washed from the trail tread is as an acceptable practice.

Some archeological sites have been surveyed and entered into the park's GIS database and are shown in Drawing 4. Certain trails have been given clearance by the park's archeologist. For major repair and stabilization work, project descriptions that describe the extent and depth of digging should be reviewed by the park archeologist (see project descriptions in Appendix A). Similarly, in areas where there are structural remains, such as along Horse-Shoe Trail A, trail work should not disturb remnants of stone structures. Volunteer projects in sensitive resource areas should be closely supervised.

Resource protection recommendations:

- Obtain archeological clearance before beginning rehabilitation projects that require extensive digging.
- Supervise volunteer projects closely, particularly in sensitive resource areas

8. Manage closed trails

The park contains many trails that are closed or should be closed, either due to erosion or resource protection needs. Closure and maintenance of a closed trail requires active management. Work required includes obscuring the trail with logs and branches, posting signs, and stabilizing active gullies. To discourage active use, educational signs, brochures, community programs, and ranger patrols are also needed. Obscuring closed trails also requires sensitivity to natural and cultural resources, to ensure that historic stonework, archeological sites, and native plant species are not disturbed.

Closure recommendations:

- Obscure closed trails but do not obliterate historic constructed features
- Add signs where active enforcement may be needed, such as on mountain bike trails
- Patrol closed trails to determine whether new routes have been created or resource damage is continuing
- Meet with trail users of the park (i.e. hikers, bikers and horseback riders)

9. Manage and educate trail users – mountain bikers, horses, dog-walkers, and hikers

The park's 1982 GMP and the park's current GIS database for trails clearly define appropriate use for authorized trails for hiking, biking, dog-walking, and/or horseback riding. However, it is clear that trail users are not always following the rules. When bikers and horses use steep trails that are only suitable for hiking, extensive damage occurs quickly. Every effort should be made to keep inappropriate use off of fragile trails.

User management recommendations:

- Install and maintain signs to clarify appropriate use of trails
- Install and maintain log and branch barriers and steps
- Utilize ranger patrols, enforcement, and educational programs to ensure appropriate use of trails.
- Educate park staff and public on “Leave No Trace”
- Keep maintenance vehicles off trails that are not maintained as roads
- Implement “Stabilize/Educate/Enforce strategy” - involve recreational users
- Meet with trail users of the park (i.e. hikers, bikers and horseback riders)

RECOMMENDATIONS FOR ADDITIONAL PROJECTS

The recommendations and plans contained in this assessment are intended to provide general and specific guidance related to the gradual recovery of the trail system at Valley Forge National Historic Park. Because this assessment primarily deals with the current conditions of the trails and their future maintenance, several additional tasks may be needed prior to implementation. The tasks listed below relate to work required both prior and subsequent to the implementation of trail improvement work.

- **Implement emergency stabilization work.** Chapters IV and V and Appendix A detail work needed to stabilize heavily eroded trails and protect park resources.
- **Complete an archeological assessment to highlight sensitive areas on the trails network.** Based on proposed work projects, further archeological clearance may be necessary.
- **Complete a cultural landscape report for the roads and trails network.** Several park reports contain information on the trail system, in particular the Cultural Landscape Plan (May 2002) and Valley Forge Administrative History (September 1984). However, the reports are broad in scope and trail-specific information is hard to find. A focused, comprehensive cultural landscape report on the circulation networks within the park would clarify the origin, history, and construction of the circulation system, as well as individual roads and trails. Construction documents for sections of highly crafted trail may be located in the park’s archives or other regional repositories. Research would also focus on features associated with the trails, such as historic overlooks. With an understanding of the history and construction of the trails, maintenance efforts could better preserve the character and craftsmanship of the park’s historic roads and trails.
- **Prepare an interpretative sign plan.** In combination with an improved trail brochure and development of trail circuits, interpretative signs at key points along the trails could enhance visitor appreciation of the park’s natural and cultural resources. Signs could also educate visitors on trail etiquette, such as “Leave No Trace” principles.
- **Complete environmental and Section 106 compliance.** If trails that are currently unauthorized are opened, marked and maintained, National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) compliance may be necessary to gain approvals and support for the trail.

- **Prepare a vegetation management plan for the trails network.** Many trails contain mature or overgrown plants along the trail. An ongoing vegetation management program is needed to ensure that hazardous trees are removed, a healthy understory is maintained, and non-native invasive species are controlled. In addition an ongoing revegetation program is needed to repair eroded slopes or to help define and narrow widened trails.
- **Prepare a preservation maintenance plan for the trails network.** To help clarify the extent of trail maintenance needed, define specific projects, and anticipate material and labor needs, a detailed trail preservation maintenance plan is needed. This will facilitate the development of an Adopt-a-Trail program, volunteer projects, trail endowments, and training programs.

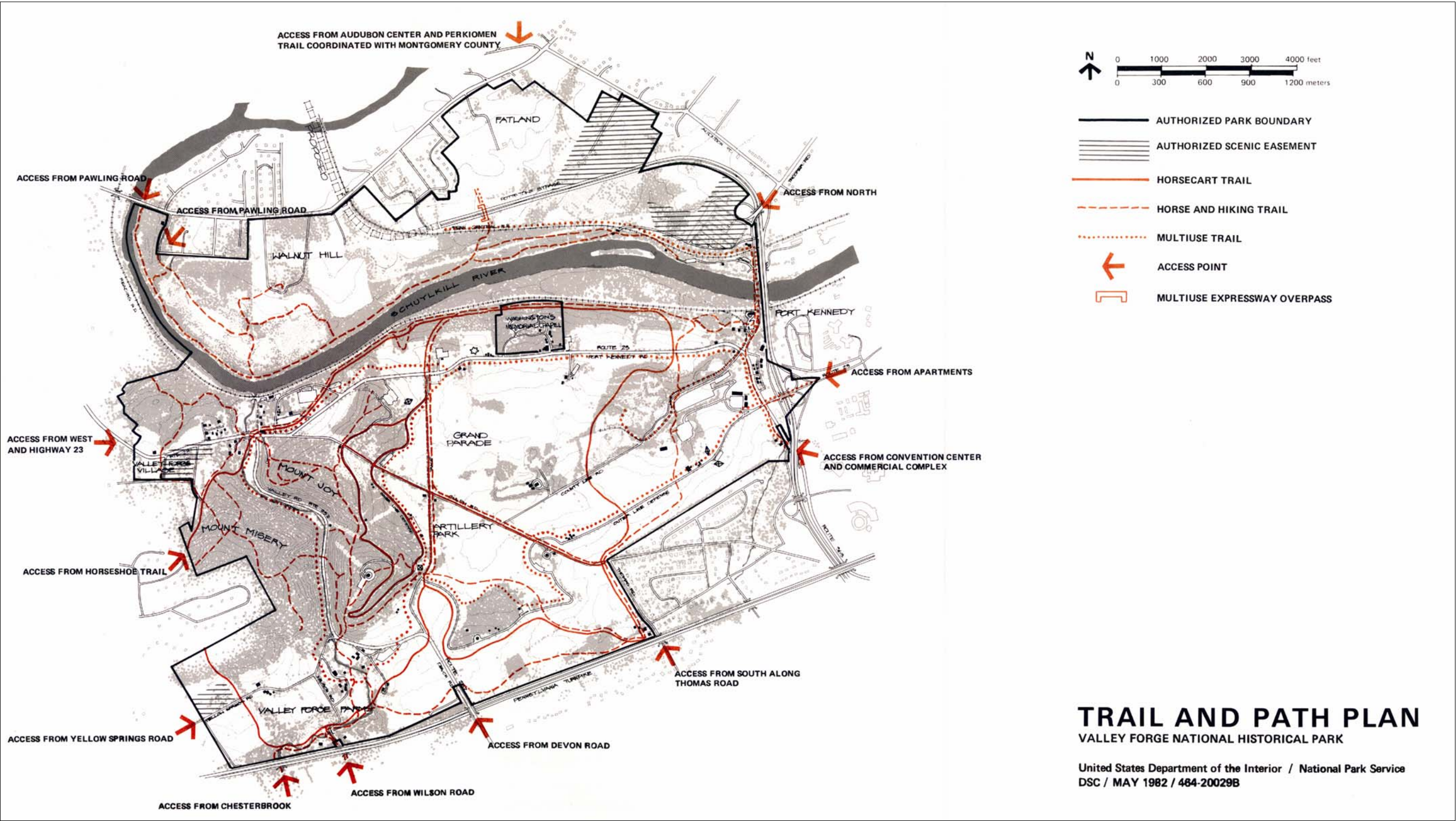


Figure 3.1. *Trail and Path Plan*, Drawn by National Park Service, May 1982 (VAFO Archives).

